

# Notice of Allowability

Application No.

10/762,244

Examiner

Nikita Wells

Applicant(s)

HARADA, HISASHI

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to "Preliminary Amendment" received 23 January 2004.
2. ☒ The allowed claim(s) is/are 1-15.
3. ☒ The drawings filed on 23 January 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 23 January 2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

Nikita Wells  
Primary Examiner  
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## **DETAILED ACTION**

### ***Examiner's amendment***

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jeffrey Wyand on August 2, 2005.

The Examiner initiated an Interview with the Applicant to correct the missing preamble of the independent claims 14 and 15, in order that the application could be allowed. Claims 14 and 15 are amended as follows:

In claims 14, line 1: "A irradiation method" has been changed to --An irradiation method--.

In claims 14 and 15, line 1: after "An irradiation method", the following has been inserted: --for radiating a charged particle beam transported from a particle accelerator onto a location to be irradiated that is positioned on an irradiation table, said method--.

### ***Allowable Subject Matter***

2. Claims 1-15 are allowed.
3. The following is an examiner's statement of reasons for allowance:

With respect to the independent claim 1, prior art fails to disclose or make obvious, in combination with other recited features of the claim limitations, an irradiation apparatus for radiating a charged particle beam transported from a particle accelerator onto a location to be irradiated that is positioned on an irradiation table, said apparatus comprising: a beam

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interruption part for interrupting said radiation beam; a position control part for controlling a position of said irradiation table such that said radiation beam is radiated onto an entire surface of a target in a plurality of irradiation zones; and a multileaf collimator control part for controlling said radiation beam to provide a slope to a dose distribution in the overlapping zone of said irradiation zones such that the dose distribution is made flat over the entire surface of said target including said overlapping zone by the plurality of radiations of said radiation beam.

With respect to the independent claims 14 and 15, prior art fails to disclose or make obvious, in combination with other recited features of the claim limitations, an irradiation method for radiating a charged particle beam transported from a particle accelerator onto a location to be irradiated that is positioned on an irradiation table, said method comprising: dividing a location to be irradiated into two or more irradiation zones that partially overlap each other having non-overlapping zones and overlapping zones adjoining each other; radiating a radiation beam in a first radiation zone in such a manner that the distribution of a dose radiated to two overlapping zones in an irradiation zone has a slope that decreases from a boundary between said overlapping zone and a non-overlapping zone; and radiating the radiation beam to a second irradiation zone in such a manner that a distribution of a dose radiated to said overlapping zone has a slope that decreases from boundaries between said overlapping zone and a non-overlapping zone in said second irradiation zone toward said first irradiation zone with a dose distribution in a target being made flat.

The dependent claims 2-13 are allowable by virtue of their dependence upon the independent claim 1.

*Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. J.H. Hughes (6,600,810 B1) discloses a multiple layer multileaf collimator capable of improving the resolution for coverage of a target during radiation therapy. X. Wu (6,127,688) discloses an iso-energetic intensity modulating filter and method for therapeutic charged particle beams in which attenuating members are arranged to attenuate portions of the beam while permitting other portions of the beam to pass through the space between attenuating members.
5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikita Wells whose telephone number is (571) 272-2484. The examiner can normally be reached on 8:30 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The central fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.
7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Nikita Wells". The signature is fluid and cursive, with the first name "Nikita" and the last name "Wells" clearly distinguishable.

Nikita Wells, Primary Examiner  
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August 2, 2005